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ABSTRACT

The influence of change in teachers' instructional effectiveness upon the relationship between their expectations for students' performance and student achievement outcomes is investigated. Data were gathered from 44 intermediate and high school level teachers who participated in an inservice training workshop on mastery learning strategies. Correlations between teachers' initial expectations for students' achievement and students' final examination scores, final grades, and teachers' follow-up expectations for students, were all significantly lower in mastery classes of those teachers who experienced some positive change in their instructional effectiveness. The degree of change in instructional effectiveness was determined by comparing each teacher's mastery and control classes in terms of the following two outcome measures: (1) percent of students in each class receiving an A or B as course grade; and (2) average percent correct on a common course examination. Implications regarding related teacher perceptions and classroom behaviors are discussed. (Author/RL)

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THE INFLUENCE OF CHANGE IN INSTRUCTIONAL EFFECTIVENESS UPON THE RELATIONSHIP OF TEACHER EXPECTATIONS AND STUDENT ACHIEVEMENT

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Abstract

This study was designed to determine if change in the instructional effectiveness of teachers influences the relationship between naturally formed teacher expectations and student achievement outcomes. Data were gathered from 44 intermediate and high school level teachers who participated in an inservice training workshop on Mastery Learning strategies. Correlations between teachers' initial expectations for students' achievement and students' final examination scores, final grades, and teachers' follow-up expectations for students, were all significantly lower in mastery classes of those teachers who experienced some positive change in their instructional effectiveness. Implications regarding related teacher perceptions and classroom behaviors are discussed.

The Influence of Change in Instructional Effectiveness Upon the Relationship of Teacher Expectations and Student Achievement

Since the publication of Pygmalion in the Classroom (Rosenthal & Jacobson, 1968), numerous researchers have focused their attentions on teacher expectations as an important variable in the teaching-learning process. Abundant evidence has indicated that teachers do form expectations for student performance (e.g., Brophy & Good, 1970; Dusek & O'Connell, 1973; O'Connell et al., 1974; Rist, 1970) and do tend to treat students differently depending upon these expectations (e.g., Braun, 1976; Brophy & Good 1970; Good & Brophy, 1972; Rothbart et al., 1971). Furthermore, teacher expectations for student performance, and presumably the behavioral manifestations of those expectations, have also been shown to relate to measures of student academic achievement (Brophy & Good, 1970; Dusek, 1975; Rosenthal, 1974, 1976).

Early studies of the effects of teacher expectations (i.e., Rosenthal & Jacobson, 1968) generated a great deal of controversy as to whether manipulated or inaccurate expectations on the part of teachers could substantially alter student achievement outcomes. Further research into this issue has been inconclusive. Nevertheless, strong evidence has been presented indicating that naturally formed teacher expectations can serve to sustain the pre-existing achievement variations among students (Braun, 1976; Brophy & Good, 1974; Cooper, 1979; Dusek, 1975). In addition, a number of models have been

proposed describing how these expectations are formed and the influence they can bring to bear upon students learning (Braun, 1976; Brophy & Good, 1970; Cooper, 1979; Dusek, 1975; Good, 1981; Lockheed & Morgan, 1979).

In recent years studies on effective schools and instructional effectiveness have reiterated the importance of teacher expectations, particularly with respect to student performance. Brookover and Lezotte (1979), for example, found that teachers and principals in schools where achievement scores were improving had higher expectations for their students than did the staffs in schools where achievement was declining. Similarly, Edmonds & Frederiksen (1978) found that teachers in instructionally effective inner-city schools had "high expectations" for all of their students. Other studies have yielded comparable results (Brophy & Evertson, 1976; McDonald & Elias, 1976; Rotter et al., 1979; Weber, 1971).

Despite the many studies in this area, however, several aspects concerning teacher expectations have received only scant attention. For instance, Dusek (1975) noted that research is needed on the stability of teacher expectations. Little is known about the changes which may occur in teacher expectations over the course of a school year or among groups of teachers at different grade levels. Furthermore, few studies have explored variables which might serve to alter naturally formed teacher expectations or influence the typically strong relationship between these expectations and student achievement.

This study was designed to investigate the influence of <u>change in teachers' instructional effectiveness</u> upon the relationship between their expectations for students' performance and student achievement outcomes.

It was hypothesized that as teachers adopt more effective instructional practices, the strength of the relationship between initial expectations for performance and resultant student achievement outcomes would be reduced.

Theoretical Framework

Over the past decade a wide variety of programs and curriculae have been developed specifically to enhance the instructional effectiveness of teachers. Some of the most successful among these efforts are programs centering around Mastery Learning instructional strategies (Bloom 1968, 1971). Reviews of Mastery Learning research indicate that these strategies can aid teachers in dramatically altering the learning and resultant achievement which takes place in their classrooms (Block & Burns, 1976; Guskey, 1980). In this study, the introduction of Mastery Learning strategies was employed as a means of altering the instructional effectiveness of teachers. The focus of the study, however, was upon the influence this change in effectiveness might have upon the relationship between teacher expectations and student achievement outcome variables.

Method

Subjects. The subjects included in this study were 44 intermediate and high school level teachers from two metropolitan school systems. All of these teachers had volunteered to participate in an inservice education workshop dealing with Mastery Learning instructional techniques. For their participation in the workshop, teachers received salary lane-placement credit and were paid a small fee. While both of these provided strong incentives for teachers to participate in the workshop, it is not believed that they lead to any systematic bias in the sample selection.

All of the teachers in the sample had taught at the intermediate or high school level for at least three years, with a mean of 9.4 years of teaching experience. Twenty-four of these teachers were male; 20 were female.

Procedure. As a part of participation in the inservice program, each teacher agreed to teach two classes in the same subject area, at the same grade level, during the school term following the training (the cooperation of building principals was secured in order to facilitate this scheduling). One of these classes was to be taught in a Mastery Learning format (mastery) while the other was to be taught by whatever methods or procedures the teacher typically employed (control). Teaching in a Mastery Learning format required no change in the teacher's group-instructional procedures. In fact, lessons and class presentations in mastery and control classes were most likely identical. Also, instruction in both mastery and control classes was teacher-paced. The difference was in the feedback and corrective procedures provided to students in the mastery class. That is, while students in both mastery and control classes were administered regular quizzes to check on their learning progress, the quizzes administered to students in the mastery class (referred to as formative tests) were paired with specific corrective activities, designed to help students remediate learning problems or difficulties identified by errors made on the quizzes. After providing opportunities for students in the mastery class to work on the correctives, a second quiz or formative test was administered to check on the success of the corrective activities. The addition of this feedback and corrective

process was the primary distinction between the instructional format in the mastery class compared to that in the control class.

Three weeks after the teachers returned to their classrooms following the inservice training program, they were asked to rate or classify the students in each of their classes into one of five groups based upon academic potential or "probable achievement" in the class. Each student was assigned a rating of 1 (highest group), through 5 (lowest group). Each group was to contain approximately the same number of students.

After one school term (an academic semester) of using Mastery Learning strategies, teachers were again asked to classify their students into five groups based upon achievement potential. Comparisons were then made between teachers' initial ratings of students and course grades, course examination scores, and end of term ratings.

Results

Although students in the classes assigned to teachers in the study were heterogeneously grouped, teachers administered a short content-related pretest to each of their classes to assure the original equivalence of the classes. Comparisons of class means showed that there were no statistically significant differences between the class pairs for any of the 44 teachers. The number of students per class ranged from 21 to 34, however, within teacher differences (between class pairs) were typically quite small.

The degree of change in instructional effectiveness was determined by comparing each teachers' mastery and control class in terms of two outcome measures. The first was the percent of students in each class receiving a high (A or B) course grade. Identical standards for grading were to be employed in both classes. The second measure was the average percent

correct on a common course examination. If a larger percent of students received high course grades and the average percent correct on the course examination was greater in a teacher's mastery class than in the control class, that teacher was classified as experiencing a positive change in his/her instructional effectiveness. If a larger percent of students received high course grades in the control class or if the average percent correct on the course examination was greater in the control class, that teacher was classified as experiencing little or no change in his/her instructional effectiveness. Using these criteria, 34 of the 44 teachers were found to have experienced positive change in their instructional effectiveness. The ten teachers classified as having experienced little or no change included both male and female teachers and were fairly evenly dispersed among subject areas and grade levels. Mean differences between the mastery and control classes of these two groups of teachers on the criterion outcome measures are illustrated in Table 1.

[Insert Table 1 about here]

To explore the effects of this change in instructional effectiveness, correlations were calculated between teachers' initial ratings of students, students' course grades, students' course examination scores (percent correct), and teachers' final ratings of students. This was done for both the mastery and control classes of each teacher. Median correlations for teachers in the positive change and no change groups are illustrated in Table 2. Careful inspection of this table shows a very systematic trend in the relations among these measures.

[Insert Table 2 about here]

The correlations in Table 2 show that the ratings made by teachers in the no change group remained virtually unchanged from the beginning to the end of the term for students in both their mastery classes (r=.92) and their control classes (r=.90). However, while the ratings made by teachers in the positive change group remained quite consistent for students in their control classes (r=.83), there was a statistically significant decline in the consistency of their ratings of students in their mastery classes (r=.53). A similar trend was found in comparisons between ratings and course grades and between ratings and course examination scores. That is, the correlations between these measures were consistently high in the mastery and control classes of teachers in the no change group and in the control classes of teachers in the positive change group. Comparisons made in the mastery classes of the positive change group, however, were significantly lower.

Discussion

The results of this study are consistent with what would be predicted by Mastery Learning theory. As students are provided the time and instruction which are appropriate for their learning, Mastery Learning theory predicts that the correlation between students' aptitude measured before instruction and their achievement after instruction should approach zero. In this study, teacher ratings of students' potential for achievement might be seen as parallel to a measure of students' aptitude. Thus it follows that the greatest reduction in the correlation between these ratings and student achievement outcome measures would be expected to occur in those classes where these instructional techniques had been most successfully implemented.

One might suggest, however, that the reduction in these correlation coefficients is simply a statistical phenomenon due to the design of the study. That is, in the mastery classes of the teachers classified as having experienced a positive change in their instructional effectiveness, the variance of students' course grades and course examination scores would likely be reduced. This reduction in variance would, in turn, lower the correlation computed between these outcome measures and teachers' initial ratings of students. Inspection of the data indicated that indeed this was true. The variance in course grades and in course examination scores was less in the mastery classes of teachers in the positive change group than it was in their control classes or in the classes of teachers in the no change group. However this was not the case with respect to comparisons between initial and final ratings of students. Because teachers were pressed to have approximately the same number of students in each of the achievement potential categories (1 through 5), the variance of final ratings was in all cases nearly identical to that of initial ratings. Hence, the lower correlation between initial and final ratings of students in the mastery classes of the teachers who experienced a positive change in their instructional effectiveness cannot be explained as simply a reduction in statistical variation.

As teachers adopt more effective instructional practices and as a result, experience a change in their effectiveness with students, the relationship between their initial expectations for performance and student achievement outcomes does appear to be reduced. In addition, under these more effective instructional conditions, teachers appear to be less consistent in their ability to rate or classify students in terms of achieve-

ment potential. It is probable that as teachers become more successful in enhancing the learning of students, they have greater difficulty categorizing students in terms of such characteristics as achievement potential. Under these conditions, teachers are likely to view students in terms of more alterable characteristics which they as teachers might be able to influence.

It is also possible that the differential behavioral patterns of teachers typically associated with their expectations for students are altered when they adopt more effective instructional practices. In other words, under more effective instructional conditions (such as those associated with Mastery Learning) teachers may interact more similarly with high- and low-expectancy students, provide more similar types of praise for each, provide more similar kinds of feedback to each, and make more comparable demands for work and effort of each. These changes in teachers' behavioral patterns could also serve to reduce the relationship between initial expectations for performance and student achievement outcomes.

Further research is needed to explore the exact nature of these changes in teachers. Certainly the introduction of Mastery Learning strategies, and particularly the feedback and corrective elements, alter in some fashion the instructional sequence and classroom behavioral patterns of teachers. However, additional research involving classroom observations is needed to determine whether these format changes affect teachers' differential interaction patterns with students, or whether teachers actually do come to view students differently under more effective instructional conditions.

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Table 1

Mean Differences and Standard Deviations for Two Groups of Teachers on Selected Student Outcome Measures

Differences Between Mastery and Control Classes	Positive Change Group (n=34)		No Change Group (n=10)	
	$\bar{X}$	(S.D.)	$\bar{X}$	(S.D.)
Percent Receiving High Course Grades	+17.86	(5.06)	-3.14	(1.89)
Percent Correct on Course Examinations	+11.17	(3.83)	-1.97	(.97)

Table 2

Median Correlations Between Teachers' Ratings of Students,

Students' Course Grades, and Students' Course Examination Scores

Teacher Group	Correlation Between Initial Rating & Final Rating		Correlation Between Initial Rating & Course Grades		Correlation Between Initial Ratings & Final Exam Scores	
	Mastery	Control	Mastery	Control	Mastery	Control
Postive Change (n=34)	.53*	.83	.51*	.80	.31*	.50
No Change (n=10)	.92	.90	.77	.79	.69	.75

* $p < .05$